Article

Urban Affairs Review
2021, Vol. 57(6) 1590–1625

DOI: 10.1177/1078087420922910
journals.sagepub.com/home/uar
SAGE

Capitalizing on Collapse: An Analysis of Institutional Single-Family Rental Investors

Gregg Colburn[1], Rebecca J. Walter[1] and Deirdre Pfeiffer[2]

Abstract

A well-documented consequence of the recent foreclosure crisis was a pronounced dislocation in the single-family home market. Large institutional buyers emerged to capitalize on this dislocation. These firms acquired hundreds of thousands of single-family homes to create a pool of single-family rentals (SFRs) in markets across the United States. Existing analyses of institutional investors focus on their aggregate characteristics and associated community effects, showing faster housing recovery in places hard hit by foreclosure but also increases in evictions and home prices. Relatively little is known about individual firms' strategies or how they have evolved over time—knowledge that is critical to understanding the diversity of these actors and establishing causal links to community impacts. We help fill this gap by using quantitative and qualitative data from the corporate filings of publicly traded SFR companies to understand the industry's birth, growth and development, strategies and approaches, and points of differentiation.

Keywords

single-family rentals, institutional investors, housing, rental housing

[1]University of Washington, Seattle, WA, USA
[2]Arizona State University, Tempe, AZ, USA

Corresponding Author:
Gregg Colburn, University of Washington, 3950 University Way, Seattle, WA 98105, USA.
Email: colburn3@uw.edu

Introduction

A well-documented consequence of the recent foreclosure crisis was a pronounced dislocation in the single-family home market. Large institutional buyers backed with Wall Street capital emerged to capitalize on this dislocation. These firms acquired hundreds of thousands of single-family homes to create a pool of institutionally owned single-family rentals (SFRs) in markets across the United States. In this article, we refer to these firms as "institutional SFR investors." Existing research highlights both positive and negative effects of this investor activity. Analyses suggest that home purchases and subsequent investments by these actors have reduced vacancies and aided recovery from the housing bust (Mills, Molloy, and Zarutskie 2019); however, studies also show associations between institutional investment in SFRs and increases in home prices and evictions (Mills et al. 2019; Raymond et al. 2018).

Absent from this scholarly conversation is a more detailed analysis of the rise of the institutional SFR industry, the motivations of the players, key industry trends, and points of differentiation among the various firms—knowledge that is critical when classifying these investors and examining causal effects (Mallach 2010, 2014). This article helps close this breach by using a mixed methods approach to provide a systematic analysis of the industry, its firms, and strategies employed. Our findings highlight variation within the institutional SFR investor category, offer context to help explain the outcomes identified in existing research, and underscore trends that policymakers, researchers, and advocates should follow as the institutional SFR market continues to grow and mature.

This article proceeds as follows. First, we review the rise of institutional SFR investors and synthesize existing knowledge on these actors' characteristics, behaviors, and associated effects. Second, we describe the data and methods used in the research. Next, we turn to the study findings. We identify themes that are prevalent across all firms within the industry and then discuss their points of differentiation. Our conclusion identifies implications for policymakers, scholars, and advocates by discussing missed opportunities and noting areas of focus about the future development of this industry.

An Institutional SFR Asset Class: Catalysts, Characteristics, and Consequences

SFRs have long been a mainstay of the U.S. housing stock. What has changed about SFRs over the past decade is the increasing involvement of institutional investors in this space. This section synthesizes existing knowledge on the

evolution of the institutional SFR industry and emerging research on how concentrated acquisition and investment from these actors may be changing neighborhood conditions and tenant experiences.

Catalysts

SFRs are a longstanding phenomenon (Reid, Sanchez-Moyano, and Galante 2018; Schnure 2014). About 20% of detached single-family homes were rentals in 1970 (Reid, Sanchez-Moyano, and Galante 2018). The rental share of single-family homes dropped during the 1990s in concert with rising homeownership rates, which were spurred in part by falling interest rates and expanding access to credit. Only about 13% of detached single-family homes were rentals at the height of the housing boom in 2006 (Reid, Sanchez-Moyano, and Galante 2018). However, close to 17% of single-family homes were rentals in 2015, which represented a 34% increase from 2006 (Reid, Sanchez-Moyano, and Galante 2018).

What is novel about the current iteration of the SFR industry is the institutional ownership of homes and the publicly traded securities issued by these market participants (Fields 2018). For decades, the single-family home rental industry was the exclusive domain of small investors (Amherst Capital Management 2016; Eisfeldt and Demers 2018; Mills et al. 2019). Conventional wisdom suggested that the dispersed nature of SFRs would make them difficult to manage on a large scale and prevent SFRs from becoming an institutional real estate asset class, like multi-family real estate (Williams 1993). Indeed, only about one quarter of SFRs were owned in portfolios of 10 or more properties in 1996 (Mills et al. 2019). However, this assumption changed in the aftermath of the housing crisis, as rapidly declining prices for single-family homes (see Figure 1), mounting foreclosures, and limited access to mortgage credit increased demand for rentals (Amherst Capital Management 2016; Eisfeldt and Demers 2018; Fields 2018; Immergluck 2018; Lambie-Hanson, Li, and Slonkosky 2019; Mills et al. 2019; Molina 2016; Reid, Sanchez-Moyano, and Galante 2018; Schnure 2014). These dynamics enticed sophisticated Wall Street investors to enter the SFR industry in 2009 which prompted observers to identify SFRs as a new, institutional asset class (Amherst Capital Management 2016; Fields 2018; Mills et al. 2019). Beginning in 2012, many of these firms became publicly traded Real Estate Investment Trusts (REITs) following initial public offerings of common stock. By 2019, these firms had accumulated a total portfolio of over 200,000 homes worth in excess of $30 billion.

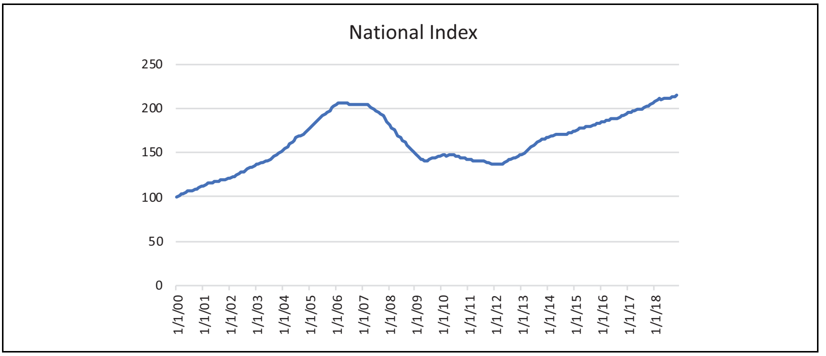

Figure 1. S&P/Case-Shiller 20-city composite home price index.

Characteristics

Despite earlier conventional wisdom to the contrary, industry analysts now argue that institutional ownership of SFRs is a sustainable business model due to certain advantages that these investors enjoy, including economies of scale, access to cheap financing, and favorable risk and return profile (Amherst Capital Management 2016). Total returns on SFR investments are a function of both rental yield and capital gains. Analysis demonstrates that total returns vary by city and that the composition of returns also varies by geography. In higher priced cities, rental returns tend to be lower, but capital gains are higher (Eisfeldt and Demers 2018). Based on data from 1986 to 2014, total returns on SFR investments, were, on average, between 8% and 10% per annum (Eisfeldt and Demers 2018).[1]

Existing research also shows that SFRs acquired by institutional investors have remarkably similar characteristics that are distinct from non-institutionally owned SFRs. For instance, they are more likely to have three to four bedrooms and be built after 1978 (possibly to avoid exposure to lead based paint) (Amherst Capital Management 2016; Mills et al. 2019). Institutional investors also focus their acquisition activity in similar geographic markets. While the nationwide percentage of SFRs owned by institutional investors is quite low (about 2% in 2014), in certain regions and neighborhoods, those percentages are much higher (Schnure 2014). Our estimates, based on 2017 data, suggest that Invitation Homes, American Homes 4 Rent, and Tricon owned over 10% of SFRs in the Tampa Metropolitan Statistical Area (MSA), just over 7% in the Atlanta MSA and nearly 6% in Phoenix.[2] Acquisitions by institutional investors were most heavily concentrated in fast-growing regions hardest hit by the foreclosure crisis and economic

recession, where price declines and increases in rental demand were steepest (Amherst Capital Management 2016; Eisfeldt and Demers 2018; Mills et al. 2019; Schnure 2014). These dynamics have led to a confluence of institutional SFR investment in the U.S. Sunbelt, with 14 of the 17 regions with at least 1,000 securitized SFR properties in 2015 being located in the Sunbelt (Fields, Kohli, and Schafran 2016; Schnure 2014). Studies examining neighborhood variation in institutional SFR investment have found higher concentration of homes in middle- and working-class suburban neighborhoods that were harder hit by the subprime lending and subsequent housing crisis that are racially and ethnically diverse, but remain credit-challenged (Eisfeldt and Demers 2018; Mills et al. 2019; Pfeiffer et al. 2019). Institutional investors also were attracted to areas with lower price-to-rent ratios and low poverty, crime, and tax rates and higher proportions of college graduates and households with children (Amherst Capital Management 2016; Mills et al. 2019).

Consequences

Emerging research shows an association between concentrated institutional SFR investment and mismanagement, rising home prices, and evictions (Fields 2014; Mills et al. 2019; Raymond et al. 2018). These trends might signal a link among institutional SFR investment and social inequality. One concern is that the automation of property management by institutional SFR owners puts tenants at risk of experiencing mismanagement and eviction by making it difficult for tenants to contact and hold landlords accountable for problems when they occur. Institutional SFR owners have developed large technological infrastructure systems that free them from interacting with their tenants (Fields 2018; Mills et al. 2019). For instance, Starwood Capital Group's property showings and repairs are scheduled electronically, and would-be tenants are able to enter and leave properties through lock boxes, practices that Chairman & CEO Barry Sternlicht compared to "an Uber delivery" ("Invitation Homes to be largest US landlord in Starwood-Blackstone Deal" 2017). Not one of a sample of Riverside or Los Angeles Invitation Homes tenants reported being in regular contact with their landlord in the early 2010s (Fields 2014). Another concern is that REIT shareholders may demand harsh cost cutting or revenue-generating strategies, which may translate into aggressive annual rent increases and other measures that may boost profits but potentially harm tenants. This dynamic is especially worrisome given the lack of strong tenant protections in many of the U.S. Sun Belt regions that these investors have heavily targeted (Immergluck 2018).

Evidence from Atlanta and Los Angeles offers support for these concerns, showing that tenants in institutionally owned SFRs experience property

mismanagement and higher rates of rent increases and eviction, particularly in lower income communities (Fields 2014; Mari 2020; Raymond et al. 2018). For instance, typical rent increases reported by a sample of Atlanta Invitation Homes tenants in the early 2010s were about 37% to 53% after the first year; many tenants also expressed strong concerns about the quality of their home renovations (Fields 2014). Institutional SFR investors in Atlanta were more likely than other landlords to attempt to evict their tenants in the mid-2010s, even after accounting for a range of associated tenant, property, and neighborhood factors (Raymond et al. 2018). Whether effects on rents, property maintenance, and evictions are more localized or widespread is poorly understood; for example, one national analysis found no relationship between changes in neighborhood institutional SFR investment and rents in the early 2010s (Mills et al. 2019).

There is also preliminary evidence that institutional investment in SFRs may contribute to rising housing prices (Eisfeldt and Demers 2018; Mills et al. 2019). For instance, SFR yields and price appreciation were higher in lower priced neighborhoods than higher priced neighborhoods in a sample of 30 cities from 2012 to 2016 (Eisfeldt and Demers 2018). Nationwide, increases in housing prices and decreases in vacancy rates from 2012 to 2014 were greater in ZIP Codes with greater earlier increases in institutional SFR investment (Mills et al. 2019). It is important to keep in mind that these findings are correlational and not causal, given that firms may choose to invest in places with higher projected housing price growth (Mills et al. 2019). Analysts also suggest that concentrated institutional investment in SFRs may lead to social benefits, such as faster recovery from the mid-2000s housing bust and lower rates of renter overcrowding, though research on these and other potential benefits is in its infancy (Mills et al. 2019; Schnure 2014).

Gap in Knowledge

Although there is growing evidence on how tenant and neighborhood conditions are changing in communities experiencing concentrated institutional SFR investment, relatively little is known about the strategies and behaviors of institutional SFR investors and how they have evolved over time—knowledge that is necessary when investigating causal links among tenant experiences, neighborhood dynamics, and renters' housing opportunities. A starting framework is Mallach's (2010) typology of distressed property investors, which establishes four investor types: "rehabber," "flipper," "milker," and "holder." The first three investor types all purchase homes with a relatively short investment time horizon. The final category—holder—purchases

higher quality homes with the intention to hold those properties for five to eight years (Mallach 2010). In Mallach's description, a holder will "Buy properties and rent them out in fair to good condition, usually following responsible maintenance and tenant selection processes" (p. 10). Of the four options, the institutional SFR firms seem most closely aligned with the holder category; indeed, previous research shows that institutional SFR investors are especially unlikely to sell their properties within two years of purchase (Mills et al. 2019). Mallach (2014) updated his typology to split the holder category into two groups: short-term holders and medium- to long-term holders. The institutional SFR investors most closely resemble the long-term holder category of Mallach's (2014) revised typology, but differences remain between the Mallach's long-term holder category and the strategy and behavior of institutional SFR investors. The publicly traded nature of these firms means that they may hold onto homes for much longer than the five- to ten-year window described in the long-term holder description. Because there is pressure on public companies to continue to grow, it would be a challenge for these firms to continue to sell off homes without demonstrating a path for growth to the investment community. While there has been a recent acceleration in the sale of homes, these firms are still holding onto a large, core housing inventory that was acquired more than five years ago. In the conclusion of this article, we offer new insights into the strategies of these institutional investors and how Mallach's typology could be modified to incorporate this group of institutional SFR investors. In sum, our research helps develop a deeper understanding of institutional SFR investors by using a mixed methods approach to explore the evolution, characteristics, and behaviors of institutional SFR investors throughout the 2010s.

Data and Methods

All companies that have publicly traded securities in the United States are required to file reports with the U.S. Securities and Exchange Commission (SEC). The public disclosure of this information provides investors with details on the strategy, management, finances, and potential risks of issuers of publicly traded securities. The information in these filings helps to form the basis on which investment decisions are made. Because companies face potential legal and civil liability for omissions or misstatements in their corporate filings, readers of these filings have confidence that the information provided is truthful and accurately represents the operations of a given issuer. Obviously, there are high-profile, but infrequent, examples of corporate fraud where this is not the case (Soltani 2014). Because the purpose of

Table 1. Companies Included in Study.

Company	Ticker	Initial Public Offering Date	Acquisition Date	Acquiring Company
American Homes 4 Rent	AMH	August 1, 2013	N/A	N/A
American Residential Properties	ARPI	May 9, 2013	March 1, 2016	American Homes 4 Rent
Colony American Homes	Private	N/A	January 5, 2016	Starwood Waypoint
Altisource Residential / Front Yard Residential	RESI	December 21, 2012	N/A	N/A
Invitation Homes	INVH	January 31, 2017	N/A	N/A
Silver Bay Realty	SBAY	December 14, 2012	May 9, 2017	Tricon American Homes
Starwood Waypoint/ Colony Starwood	SWAY/ SFR	February 4, 2014	November 16, 2017	Invitation Homes

this study is to examine the strategy, operations, and finances of institutional SFR owners, SEC filings provide extensive data to use in this analysis.

The set of institutional companies that purchase and manage SFRs include both publicly traded REITs and companies that have remained private. According to industry analysis by Amherst Capital Management, of the 218,322 institutionally owned SFRs as of December 31, 2017, roughly 62% are owned by publicly traded REITs, while the remaining homes are held by firms that are not publicly traded (Amherst Capital Management 2018). The companies that do not have publicly traded securities do not have to file documents with the SEC and therefore have limited publicly available information. As a result, our sample targets publicly traded companies that have structured themselves as an REIT, and private companies that merged with publicly traded companies (see Table 1).[3] We use ticker symbols as abbreviations throughout the article.

Method

We used financial and content analysis to understand the evolving characteristics and behaviors of these key players in the institutional SFR industry. These two methodological approaches complement one another and, to the best of our knowledge, have not been used previously to analyze this industry. Analyses were performed at both the industry and company level. To

generate an understanding of the industry as a whole, financial metrics of the individual companies were aggregated in order to understand industry-level trends and dynamics. Industry metrics include housing inventory, total investment, and number and value of home acquisitions and dispositions. These industry-level metrics present an aggregate measure of activity in this industry. To bolster our understanding of industry dynamics, content analysis was used to identify key themes in the corporate filings of institutional SFR firms. On the first read of the corporate filings, initial codes were applied to passages of text. On subsequent reads, the codes were consolidated into six key themes that were prevalent across the firms in our sample. The primary industry-level themes that emerged from the content analysis were (1) creation of a new asset class, (2) industry growth, (3) industry consolidation, (4) regional focus, (5) tenant selection and property management approaches, and (6) responses to changing market conditions.

The second stage of analysis involved comparing companies within this industry across a range of indicators. We analyzed specific financial metrics, including average acquisition price, total investment value, rents charged, vacancy rates, debt outstanding, cash flows, and profit margins. In the content analysis, we used a similar coding strategy to identify company-specific strategies. We identified themes that varied across firms by triangulating the content and financial analyses, including (1) market position (based on acquisition prices and rents charged) and (2) market density. The company-level analysis highlighted conspicuous variation in strategies despite the obvious similarities of the institutional companies that own and operate SFRs. To further understand the operations of individual companies, we supplement the financial and content analysis with a spatial analysis of the geographic distribution of housing inventory in key markets.

To test whether there is evidence of density in the spatial distribution of homes within a city, we collected SFR availability information from the websites of Invitation Homes, American Homes 4 Rent, and Tricon American Homes. The rental listings were geocoded and mapped against median household income in ArcGIS software for the Atlanta, Phoenix, and Tampa MSAs. To further visualize the spatial distribution of the institutional investor listings, kernel density was used to convert the actual location of the listings into a smooth surface that illustrates the concentration of the listings.

There are two primary limitations of this study. First, companies publish their own corporate filings; thus, they have a motivation to present the company and its operations in a favorable light. The check on this behavior is the potential legal liability that a company could face for failing to provide truthful disclosure to investors. Therefore, investors can derive a strong degree of confidence in the objective disclosures in corporate filings, but

subjective disclosures about business operations (that cannot be directly proven to be false) may not be entirely credible. The second limitation is that companies have some leeway in what information they disclose and how they disclose it. For example, many companies disclose their housing inventory by city, while others disclose their inventory by state. The variation in what information is disclosed and the format of that disclosure can make comparisons, in some circumstances, more difficult.

Research Findings

The financial analysis combined with the content analysis of the corporate filings produced findings of themes at two levels of analysis. First, we identify industry-level themes that are present for all the participants in this new industry. Second, we focus on points of differentiation across companies in our sample.

Industry-Level Themes

Creation of a new real estate asset class. All of the firms in our sample emerged in the aftermath of the Great Recession and foreclosure crisis, and began purchasing homes in one of two ways. The first category of firms includes Invitation Homes and Starwood Waypoint, which began as subsidiaries of major investment firms. The Blackstone Group, a large, global asset manager, created Invitation Homes. Starwood Capital Group, a private investment firm focused on global real estate, established Starwood Waypoint Homes. These large investment firms raised capital and used their fund structures to establish and grow their SFR businesses. The second category includes companies whose principals began opportunistically purchasing single-family homes prior to the creation of the corporate entity. Examples of this model include American Homes 4 Rent and American Residential Properties. In the case of American Homes 4 Rent, the firm's Chairman began purchasing homes in 2011 through an LLC structure and the corporate entity began its operations in November 2012 to continue the investment activities of the founder and chairman ("American Homes 4 Rent Form 10-K for Fiscal Year Ended December 31, 2013" 2014). American Residential Properties was created in a similar way. Its founders established an investment firm in October 2008 and began acquiring homes with their own capital ("American Residential Properties, Inc. Form 10-K for Fiscal Year Ended December 31, 2013" 2014).

U.S. housing market conditions were a main catalyst in the formation of the firms in our sample. For example, American Homes 4 Rent noted that the

company was formed "to take advantage of the dislocation in the single-family home market ("American Homes 4 Rent Form 10-K for Fiscal Year Ended December 31, 2013" 2014, p. 1)." Starwood Waypoint Residential Trust provided a similar reason for its existence, "We seek to take advantage of continuing dislocations in the housing market and the macroeconomic trends in favor of leasing homes by acquiring, owning, renovating and managing homes" ("Starwood Waypoint Residential Trust Form 10-K for Fiscal Year Ended December 31, 2014" 2015). The founders of American Residential Properties entered the industry "to capitalize on the extraordinary price deterioration in the single-family housing sector following the collapse in the housing and mortgage industries" ("American Residential Properties, Inc. Form 10-K for Fiscal Year Ended December 31, 2013" 2014). Front Yard Residential noted, "We believe that the events affecting the housing and mortgage market in recent years creates an opportunity to acquire single-family properties for rental properties at valuations that meet our investment criteria" ("Altisource Residential Corporation Form 10-K for Fiscal Year Ended December 31, 2012" 2013). Temporary market disruptions frequently generate investment opportunities (Esler 2008; NEPC 2014), but the question is whether this opportunity can sustain a new industry once market dynamics return to a more normal state.

Industry growth. While the institutional SFR industry is still relatively small compared to the large commercial REIT industry (Amherst Capital Management 2016), the speed with which this industry achieved significant scale is notable. In less than a decade, this industry went from nonexistent to a new asset class with over $30 billion of invested capital. The growth of the industry is directly correlated with market conditions. The industry began between 2008 and 2011 when prices for single-family homes were severely depressed. Firms, funds, and private individuals began purchasing homes during this time period. In addition to low prices, the ability to buy homes in bulk also accelerated the growth of the industry. The firms in our sample accumulated large portfolios through a variety of channels, including the purchase of portfolios of nonperforming loans, foreclosure auctions, short sales, and real estate owned properties (REOs)—opportunities that were abundant in the aftermath of the housing and foreclosure crisis. By 2012, firms were incorporated to continue this business at a larger scale. The firms in this sample assembled a portfolio of nearly 40,000 homes by the end of 2012. Then, using capital raised in initial public offerings and other offerings of common stock and debt, these firms acquired large numbers of homes in 2013 and 2014, bringing the total home inventory to nearly 120,000 by the end of 2014. As single-family home prices recovered between 2015 and 2018

(see Table 1), the rate of purchases slowed considerably. Figure 2 shows the growth of the housing inventory held by the firms in our sample.

Table 2 highlights the aggregate investment activity for these firms over the last decade. From inception through 2014, these firms accumulated portfolios worth over $22 billion. Beginning in 2015, the intensity of acquisitions began to slow as housing prices continued their recovery (see Figure 2). As prices rose, acquisitions slowed and the level of dispositions increased. Between 2015 and 2018, these firms sold homes with a gross book value of over $3.0 billion. The ability to continue to grow will be an increasing challenge for this industry if single-family home prices remain at high levels, because the purchase economics are far less favorable.

Industry consolidation. One of the most significant themes as this industry has matured over the past decade is consolidation. Figure 2 shows how the ownership of institutionally owned SFRs has been consolidated into an increasingly limited number of firms. After a series of acquisitions, Invitation Homes and American Homes 4 Rent have emerged as the dominant, publicly traded players in the institutional SFR industry. At the end of 2018, they collectively owned approximately 130,000 SFRs. In addition, Tricon American Homes, a subsidiary of a large Canadian investment firm, added to its existing SFR portfolio with the acquisition of Silver Bay Realty. Only one firm, Front Yard Residential, remained independent over this period. Table 3 provides a visual depiction of the institutional SFR firms and the industry consolidation over time.

Geographic focus. The housing inventory among these investors is not evenly distributed throughout the country. A combination of low housing prices and strong rental demand have motivated investors to purchase homes in particular cities. In their corporate filings, there is a remarkable similarity in the stated investment criteria of these firms. Invitation Homes "invest[s] in markets that we expect will exhibit lower new supply, stronger job and household formation growth, and superior NOI growth relative to the broader United States housing and rental market" ("Invitation Homes Inc. Form 10-K for Fiscal Year Ended December 31, 2018" 2019, p. 6). Invitation Homes characterizes their "target submarkets and neighborhoods" as "undersupplied high-growth markets" ("Invitation Homes Inc. Form 10-K for Fiscal Year Ended December 31, 2018" 2019, p. 9). According to American Homes 4 Rent, "we select our markets based on steady population growth and strong rental demand" ("American Homes 4 Rent Form 10-K for Fiscal Year Ended December 31, 2018" 2019, p. 2). Silver Bay Realty targeted markets by

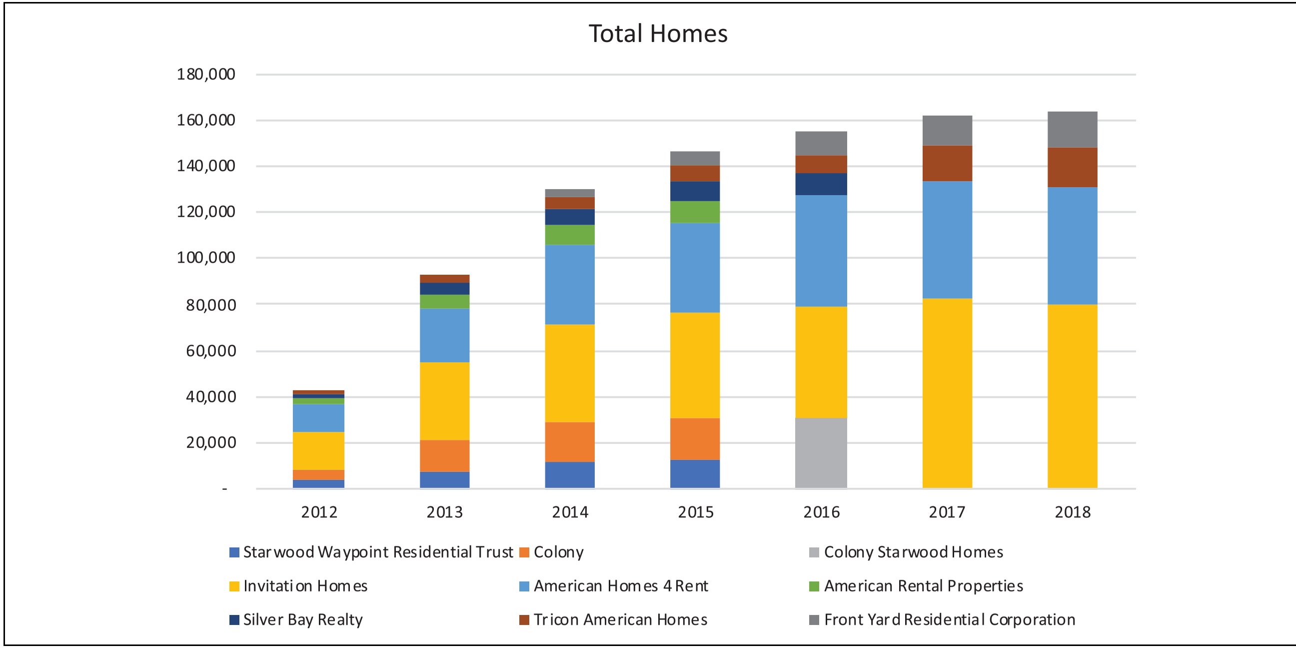

Figure 2. Total number of homes.

Table 2. Total Book Value of Institutional SFR Companies.

($ in Thousands)	2012 and Before	2013	2014	2015	2016	2017	2018
Beginning balance—imputed	—	5,563,051	14,919,128	21,841,214	24,443,548	27,392,251	29,940,420
Acquisitions	5,559,598	9,248,470	6,267,955	2,684,823	3,120,701	2,831,750	1,354,531
Improvements	3,453	128,739	779,903	348,921	193,443	160,664	79,089
Dispositions	—	(21,132)	(125,772)	(431,410)	(365,441)	(444,245)	(591,822)
Ending balance—imputed	5,563,051	14,919,128	21,841,214	24,443,548	27,392,251	29,940,420	30,782,218
Ending balance—actual	5,566,567	14,954,796	21,972,603	24,417,272	25,554,884	29,266,462	30,015,501

Note. Includes Starwood, Colony, Invitation, American Homes 4 Rent, American Rental Properties, Front Yard Residential. Excludes gross book value owned by Tricon American Homes after acquisition of Silver Bay Realty ($2.7 billion in 2018). Missing data are imputed based on prior year and future year actual figures. Ending balance—imputed is based on author estimates. Ending balance—actual is based on total, undepreciated book value of all companies in the sample. SFR = single-family rental.

Table 3. Consolidation in the SFR Industry.

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Invitation Homes	INVH				INVH	**INVH**	**INVH**	**INVH**	**INVH**		
										INVH	
Starwood Waypoint	SWAY				SWAY	SWAY	**SWAY**	**SWAY**			
Colony Starwood/Starwood Waypoint									**SFR**		
Colony					CAH	CAH	CAH	CAH			
American Homes 4 Rent				AMH	AMH	**AMH**	**AMH**	**AMH**			
									AMH	**AMH**	**AMH**
American Residential Properties	ARPI				ARPI	**ARPI**	**ARPI**	**ARPI**			
Silver Bay		SBY			SBY	**SBY**	**SBY**	**SBY**	**SBY**		
										Tricon	Tricon
Tricon					Tricon	Tricon	Tricon	Tricon	Tricon		
Front Yard Residential					**RESI**	**RESI**	**RESI**	**RESI**	**RESI**	**RESI**	**RESI**

Represents the time periods during which the subject company has been incorporated and operated as an owner/operator of SFR properties.
Represents the time periods when predecessor entities were formed prior to the incorporation of the subject company. Property acquisitions began during this phase.
BOLD Names are in bold when that company is a publicly traded REIT.
Note. SFR = single-family rental; REIT = Real Estate Investment Trust.

> identifying what we believe are the most attractive markets for developing a single-family rental business by evaluating existing and projected housing dynamics . . . including existing supply of homes, vacancy rates, prior and projected population and household growth, prior and projected migration, regional building activity, mortgage delinquency figures, employment trends, income ratios and price-to-rent ratios. ("Silver Bay Realty Trust Corp. Form 10-K for Fiscal Year Ended December 31, 2016" 2017, p. 6).

Given the similarity in the investment criteria of these firms, the result is a concentration of institutionally owned SFR homes in Sunbelt cities with strong growth dynamics. Table 4 highlights the cities with at least 2,000 institutionally owned SFRs as of December 31, 2018 (based on the inventory of Invitation Homes, American Homes 4 Rent, and Tricon American Homes). Data for Front Yard Residential is excluded because inventory is only provided by state, not city.

The spatial focus of these investors supports their business models. By purchasing homes in desirable neighborhoods, they ensure consistently high demand for their units which helps support the steady rent payments and low vacancies that generate the cash flow that these firms and their investors value. Capital appreciation potential might be greater in other neighborhoods, but the high occupancy and strong rent profile is most important to this class of investors.

Tenant selection and property management. A key ingredient in the success of institutional SFR firms is sophisticated, and active, property management. The large firms in our sample (Invitation Homes, Starwood, American Homes 4 Rent, and American Residential Properties) have developed extensive, in-house, property management organizations to serve the homes and tenants in the markets in which they operate. The approach can vary, for example, Invitation Homes highlights national standardization in property management ("Invitation Homes Inc. Form 10-K for Fiscal Year Ended December 31, 2018" 2019), while American Homes 4 Rent describes centralized corporate functions but decentralized property management ("American Homes 4 Rent Form 10-K for Fiscal Year Ended December 31, 2018" 2019). Because Invitation Homes focuses on a smaller set of target markets with very similar characteristics, standardized property management may make more sense than for a company like American Homes 4 Rent that operates in over 40 different markets.

These firms suggest that maintaining high occupancy rates, limiting tenant turnover, and minimizing nonpayment by tenants are critical to operational and financial success. The companies in our sample provide clear

Table 4. Home Inventory by Metropolitan Area.

	INVH	AMH	Tricon	Total
Atlanta	12,250	4,827	4,195	21,272
Phoenix	7,546	3,086	1,862	12,494
Tampa	8,359	2,170	1,553	12,082
Charlotte[a]	4,725	3,608	1,891	10,224
South Florida	8,984	218	725	9,927
Southern California	8,293	331	279	8,903
Orlando	5,919	1,705	442	8,066
Dallas	2,187	4,406	1,370	7,963
Houston	2,390	3,156	1,122	6,668
Northern California	4,529	117	1,010	5,656
Chicago	3,437	2,046	—	5,483
Jacksonville	1,910	2,147	490	4,547
Las Vegas	2,686	1,022	601	4,309
Nashville	798	2,686	—	3,484
Indianapolis	—	2,890	561	3,451
Seattle	3,402	—	—	3,402
Denver	2,229	—	—	2,229
Raleigh	—	2,058	—	2,058
Columbus	—	2,016	—	2,016

Note. Total homes as of December 31, 2018. RESI homes excluded because they are provided at the state level. RESI owns the most homes in GA, TX, TN, and FL. INVH = Invitation Homes; AMH = American Homes 4 Rent; RESI = Front Yard Residential.
a. For INVH, Charlotte includes all of the Carolinas.

explanations of how their rigorous approach to tenant selection helps to meet these goals. For example, Invitation Homes states,

> We seek to minimize bad debt expense through our robust, standardized resident screening process (which includes credit checks, evaluations of household income and criminal background checks), as well as by utilizing Automated Clearing House, which includes an auto-pay feature, to facilitate the collection of a majority of our rental payments. In addition, we track resident delinquency on a daily basis and assess any late fees promptly in accordance with the terms of our lease (typically between the third and fifth calendar day of the month). ("Invitation Homes Inc. Form 10-K for Fiscal Year Ended December 31, 2017" 2018, p. 13)

Starwood Waypoint employs "resident screening designed to attract a loyal and mature resident base" ("Colony Starwood Homes Form 10-K for Fiscal Year Ended December 31, 2016" 2017, p. 7). American Residential

Properties touts "rigorous tenant underwriting" ("American Residential Properties, Inc. Form 10-K for Fiscal Year Ended December 31, 2013" 2014, p. 6), while American Homes 4 Rent describes their tenant selection as a process that requires a check of identification, an evaluation of credit and income, a review of rental history, and a criminal background check ("American Homes 4 Rent Form 10-K for Fiscal Year Ended December 31, 2018" 2019).

Response to changing market conditions. These firms were created to capitalize on dislocations in the housing market. Thus, the substantial increase in single-family home prices throughout the decade of the 2010s posed a challenge for this industry. A review of corporate filings highlights three primary responses to this rise in home prices: (1) a decrease in acquisitions, (2) a different approach to acquisitions, and (3) an increase in home dispositions in 2015 to 2018. As home prices increased, acquisition activity waned. Total invested capital from the companies included in this study was $9.3 billion in 2013; by 2018, the investment activity of the same companies had fallen to $1.4 billion (see Table 2). The reduction in home purchases occurred even though the companies altered their acquisition criteria to account for higher home prices. The companies that disclose their purchase price criteria increased their purchase price targets as prices rose. Starwood Waypoint disclosed a desired purchase price range between $75,000 and $300,000 in 2014 ("Starwood Waypoint Residential Trust Form 10-K for Fiscal Year Ended December 31, 2014" 2015) and increased that range to $100,000 to $400,000 by 2016 ("Colony Starwood Homes Form 10-K for Fiscal Year Ended December 31, 2016" 2017). American Homes 4 Rent did the same by increasing their range from $70,000 to $400,000 in 2013 (AMH 10-K 2014) to $150,000 to $450,000 in 2018 ("American Homes 4 Rent Form 10-K for Fiscal Year Ended December 31, 2018" 2019).

While rising home prices help to explain the reduction in acquisition activity, the substantial decrease in home foreclosures and short sales also contributed to the drop in acquisition activity. In the early days of this industry, the companies sourced potential home purchases through similar channels and approaches: foreclosure auctions, online auctions, brokers, MLS, short sales, financial institutions, government agencies, and other SFR companies ("American Homes 4 Rent Form 10-K for Fiscal Year Ended December 31, 2013" 2014; "Starwood Waypoint Residential Trust Form 10-K for Fiscal Year Ended December 31, 2014" 2015). As the market rebounded, firms faced challenges in continuing to grow their SFR portfolios using these strategies. In response, some firms pursued a "build-to-rent"

strategy by constructing single-family home subdivisions to become new rental communities (Dezember 2019c).

American Homes 4 Rent is an industry leader in this approach. In 2017, AMH identified the presence of "a desirable level of distressed sales of homes that can be acquired below replacement cost" as a factor in identifying target markets ("American Homes 4 Rent Form 10-K for Fiscal Year Ended December 31, 2017" 2018, p. 2). However, in its 2018 10-K filing, AMH removed the reference to distressed sales and announced a new approach:

> We recently supplemented our traditional acquisition channels with our "built for rental" homebuilding program by acquiring newly constructed properties from third party developers through our National Builder Program and from our internal construction process through our AMH Development Program. We expect to rely more heavily on our "built for rental" homebuilding program to acquire properties in the future. ("American Homes 4 Rent Form 10-K for Fiscal Year Ended December 31, 2018" 2019, p. 3)

CEO David Singelyn described the benefits of this approach before a gathering of rental investors in late 2018. He explained that the costs of new construction matched the costs of acquiring resale properties in some areas, and that new construction enabled the company to acquire properties more efficiently (e.g., by integrating "preferred fixtures and finishes at the onset"), have lower maintenance costs, and charge higher rents—in short, conditions that help to bolster rental yields (Dezember 2019c).

Other institutional investors are following American Homes 4 Rent's lead. For instance, Tricon recently adopted a similar strategy by purchasing newly constructed homes and lots from developers, including a 135-unit subdivision on the outskirts of Houston, which the president, Kevin Baldridge, described as a "horizontal apartment community" (Dezember 2019c). Invitation Homes was also in conversation with home builders in late 2018, but the firm's co-founder, Dallas Tanner, was more cautious about adopting this strategy, due to the "development risk" of acquiring properties on the urban fringe (Dezember 2019c).

The final change during the recent time period was a pronounced increase in sales of homes. As highlighted in Table 2, these firms sold nearly $3 billion worth of homes between 2015 and 2018. Some sales were likely pursued in order to pare portfolios of non-core assets, but presumably many of the sales were designed to allow firms to profit from rising homes values. This intuition is confirmed in the data—between 2016 and 2018, Invitation Homes and American Homes 4 Rent recognized over $141 million in home sales capital gains. Industry analyses highlight the substantial number of sales of SFRs to

homebuyers as the homeownership rate has steadily risen during the 2010s (Schnure 2018). Schnure (2018) notes that this dynamic was largely driven by smaller, non-institutional owners of SFRs as the institutional owners were still net purchasers of homes, albeit at far lower rates than earlier in the decade.

Company-Level Themes

The industry-level themes described above show that there are strong forces and strategies that unify this industry. In this section, we identify points of differentiation within the industry based on the firms' market positions, strategies, and unit management. This analysis reveals two important findings: (1) mergers occur with companies that pursue similar market strategies and (2) the larger SFR firms operate in a different segment of the market than their smaller rivals.

Market position. As the institutional SFR industry consolidated, two large firms emerged as market leaders. Invitation Homes (started by large investment firm The Blackstone Group) secured the largest ownership stake of SFRs among the publicly traded REITs following its merger with Starwood Waypoint (founded by the real estate investment firm Starwood Capital Group). American Homes 4 Rent accumulated the second largest portfolio of SFRs in the industry following its merger with American Residential Properties. These firms, in addition to having the largest stock of homes, also have separated themselves from the other firms in the industry in terms of strategy. Both Invitation Homes and American Homes 4 Rent buy more expensive homes and charge higher rents than the other firms (which may be function of their involvement in higher priced markets in California). Table 5 provides summary statistics for the firms included in our sample. This table shows that Invitation Homes has the highest average investment per home (which includes the cost of post-acquisition renovations) as well as the highest average monthly rents.

A better understanding of market position can be highlighted by focusing on specific markets. Tables 6–8 provide the summary statistics for the markets with the most SFR homes owned by the companies in this study: Atlanta, Tampa, and Phoenix. These market breakdowns show that American Homes 4 Rent and Invitation Homes purchase more expensive homes and charge higher rents than their competitors. Generally, American Homes 4 Rent charges slightly higher rents than Invitation Homes, their primary competitor. A footnote in each table highlights the median three-bedroom rent in each market, which shows that both Invitation Homes and American Homes 4

Table 5. Market Position of SFR Companies.

Company	Number of Homes	Average Total Investment per Home	Average Monthly Rent
Invitation Homes	80,807	226,000	1,735
American Homes 4 Rent	50,838	180,894	1,567
Tricon American Homes	17,442	157,000	1,350
Front Yard Residential	15,445	147,000	1,261

Note. Figures as of December 31, 2018. SFR = single-family rental.

Table 6. Market Position of SFR Companies—Atlanta Market.

Company	Number of Homes	Average Total Investment per Home	Average Monthly Rent[a]
Invitation Homes	12,250	169,318	1,445
American Homes 4 Rent	4,827	175,255	1,525
Tricon American Homes	4,195	140,000	1,224

Note. Figures as of December 31, 2018. SFR = single-family rental.
[a]According to 2017 American Community Survey, median gross rent for a three-bedroom units in Atlanta is $1,164 per month.

Table 7. Market Position of SFR Companies—Tamp[a].

Company	Number of Homes	Average Total Investment per Home	Average Monthly Rent[a]
Invitation Homes	8,359	199,000	1,605
American Homes 4 Rent	2,170	195,000	1,678
Tricon American Homes	1,553	170,000	1,484

Note. Figures as of December 31, 2018. SFR = single-family rental.
[a]According to 2017 American Community Survey, median gross rent for a three-bedroom unit in Tampa is $1,250 per month.

Rent charge rents that are meaningfully higher than the median rents in those markets for comparably sized housing units.

Market density. The previous section highlighted that the market position of SFR firms varies. The same is true when it comes to the geographic density of homes in a particular market. Firms within this industry have different approaches when it comes to the spatial location of acquisition activity. The

Table 8. Market Position of SFR Companies—Phoenix Market.

Company	Number of Homes	Average Total Investment per Home	Average Monthly Rent[a]
Invitation Homes	7,546	164,000	1,271
American Homes 4 Rent	3,086	172,000	1,322
Tricon American Homes	1,862	175,000	1,236

Note. Figures as of December 31, 2018. SFR = single-family rental.
[a]According to 2017 American Community Survey, median gross rent for a three-bedroom unit in Phoenix is $1,280 per month.

first group, which includes Invitation Homes and its merger partner, Starwood Waypoint, strives to achieve locational density. These firms make clear in their corporate filings that having density of housing inventory in each market is essential to their business model. For example, Invitation Homes states, "Through disciplined market and asset selection, we and, prior to the Mergers, SWH [Starwood Waypoint Homes] designed our portfolios to capture the operating benefits of local density as well as economies of scale that we believe cannot be replicated" ("Invitation Homes Inc. Form 10-K for Fiscal Year Ended December 31, 2017" 2018, p. 7). Invitation Homes also articulates how density helps them with advertising and tenant selection, "Our disciplined investment strategy and local, in-market approach have given us scale and density of homes in desirable neighborhoods, enabling us to execute demographic and geo-targeted digital advertising" ("Invitation Homes Inc. Form 10-K for Fiscal Year Ended December 31, 2017" 2018, p. 9). The focus on density was also articulated by Starwood prior to its merger with Invitation Homes. Starwood noted that as of December 31, 2016, their portfolio "had an average of approximately 2,800 homes in each of our 10 largest markets. Management believes this market density creates operating efficiencies due to economies of scale" ("Colony Starwood Homes Form 10-K for Fiscal Year Ended December 31, 2016" 2017, p. 3). The merger of these firms brings together management approaches and portfolios that emphasize the importance of residential density. Underscoring the importance of locational density, in December 2019, Invitation Homes announced that it was leaving the Nashville market because of its relatively small footprint in that city by selling 708 homes to Tricon (Kiesche 2019). The focus on density is evident when one analyzes the distribution of housing inventory across the markets in which Invitation Homes operates. Table 9 shows the relative proportion of homes in a company's portfolio by city. Invitation Homes only operates in 17 markets and averages over 4,700 homes in each

Table 9. Market Density by Company.

	INVH		AMH		Tricon		Total	
	Homes	% of Total	Homes	% of Total	Homes	% of Total	Homes	% of Total
Atlanta	12,250	15.2	4,827	9.1	4,195	24.1	21,272	14.1
Phoenix	7,546	9.3	3,086	5.8	1,862	10.7	12,494	8.3
Tampa	8,359	10.3	2,170	4.1	1,553	8.9	12,082	8.0
Charlotte[a]	4,725	5.8	3,608	6.8	1,891	10.8	10,224	6.8
South Florida	8,984	11.1	218	0.4	725	4.2	9,927	6.6
Southern California	8,293	10.3	331	0.6	279	1.6	8,903	5.9
Orlando	5,919	7.3	1,705	3.2	442	2.5	8,066	5.3
Dallas	2,187	2.7	4,406	8.3	1,370	7.9	7,963	5.3
Houston	2,390	3.0	3,156	6.0	1,122	6.4	6,668	4.4
Northern California	4,529	5.6	117	0.2	1,010	5.8	5,656	3.7
Chicago	3,437	4.3	2,046	3.9	—		5,483	3.6
Jacksonville	1,910	2.4	2,147	4.1	490	2.8	4,547	3.0
Las Vegas	2,686	3.3	1,022	1.9	601	3.4	4,309	2.9
Nashville	798	1.0	2,686	5.1	—		3,484	2.3
Indianapolis	—		2,890	5.5	561	3.2	3,451	2.3
Seattle	3,402	4.2	—		—		3,402	2.3
Denver	2,229	2.8	—		—		2,229	1.5
Raleigh	—		2,058	3.9	—		2,058	1.4
Columbus	—		2,016	3.8	—		2,016	1.3
Total number of markets	17		42		16			
Total number of homes	80,807		52,783		17,442		151,032	
Average number of homes per market	4,753		1,257		1,090			

Note. Total homes as of December 31, 2018. RESI homes excluded because they are provided at the state level. They own the most homes in Georgia, Texas, Tennessee, and Florida. INVH = Invitation Homes; AMH = American Homes 4 Rent; RESI = Front Yard Residential.
a. For INVH, Charlotte includes all of the Carolinas.

market. Five markets—Atlanta, Phoenix, Tampa, South Florida, and Southern California—account for over 56% of the firm's total inventory.

The other major player in this industry, American Homes 4 Rent, relies on a far different strategy. Density was not a major focus for American Homes 4 Rent, who merged with American Residential Properties in 2016. In its 2017 10-K filing, American Homes 4 Rent states that one of its primary business strategies is to "assemble a geographically diversified portfolio. We monitor

and manage the diversification of our portfolio in order to reduce the risks associated with adverse developments affecting a particular market" ("American Homes 4 Rent Form 10-K for Fiscal Year Ended December 31, 2017" 2018, p. 2). In contrast to the density sought by Invitation Homes, American Homes 4 Rent operates in 42 different markets with an average of only 1,257 homes in each market (see Table 9). The firm's top 5 markets only account for 36% of the total portfolio.

There are two ways that market density could enhance the operations of an SFR owner and operator. First, it is easier to manage a denser portfolio of homes. By focusing on a specific set of cities, a firm can limit the number of property management offices it must maintain. In addition, within a given market, increased density reduces the time that property management staff must spend driving from one location to another. Second, greater density may provide an SFR firm with greater pricing power within a market, but we do not have evidence in this article to support that hypothesis. Such pricing power would provide SFR owners with the ability to charge higher rents than they otherwise would be able to in the absence of such power. Not surprisingly, the firms in this study do not disclose that density provides pricing power, but that is a potential source of advantage that could be addressed in future research.

The following analysis tests two questions related to market density: (a) Do we see evidence of density in the spatial distribution of homes within a city? and (b) Does a density strategy correlate with economies of scale as a company grows? To answer the first question, we rely on rental unit availability information collected in March 2019 from the websites of Invitation Homes, American Homes 4 Rent, and Tricon American Homes. Each single-family home that is for rent in the Atlanta, Phoenix, and Tampa metropolitan areas was geocoded and analyzed using ArcGIS software. These are the top 3 markets in terms of total homes in the portfolios of these three companies. Figures 3 and 4 show the distribution of available homes for each company in Atlanta, Phoenix, and Tampa. This analysis does not show the distribution of all owned homes in a region for a particular company but rather only those homes that are available for rent. But the sample for each company is sufficiently large to get a sense of the geographic distribution of homes within a metropolitan area.

Figure 3 highlights three important takeaways. First, there is a pronounced clustering of homes within the same geographic areas. In Atlanta and Tampa, a majority of these homes are outside of the principal city limits, while in Phoenix, Invitation Homes has a significant presence within the city. Existing research (Immergluck 2018) finds that, in general, SFRs are located in lower to middle-income, diverse neighborhoods, while institutional SFRs tend to

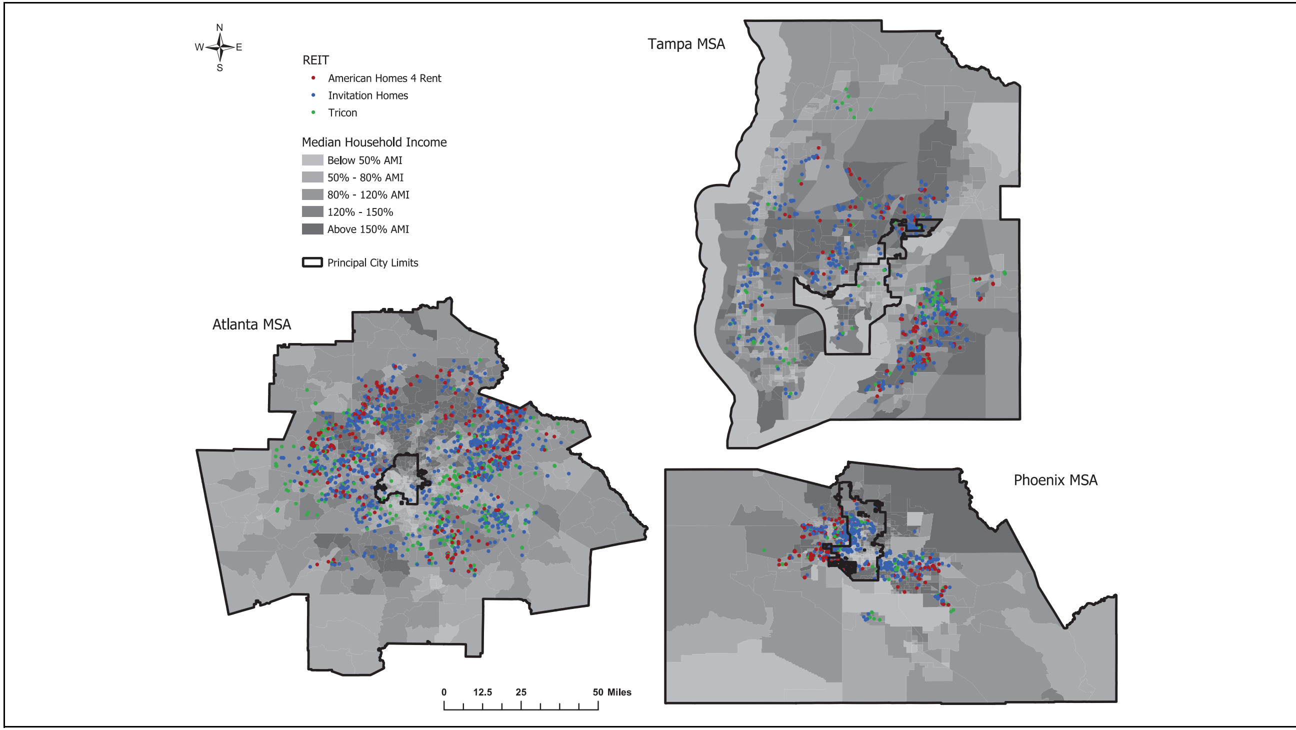

Figure 3. Distribution of SFR vacancies by company, March 2019.
Note. SFR = single-family rental; REIT = Real Estate Investment Trust; AMI = area median income; MSA = Metropolitan Statistical Area.

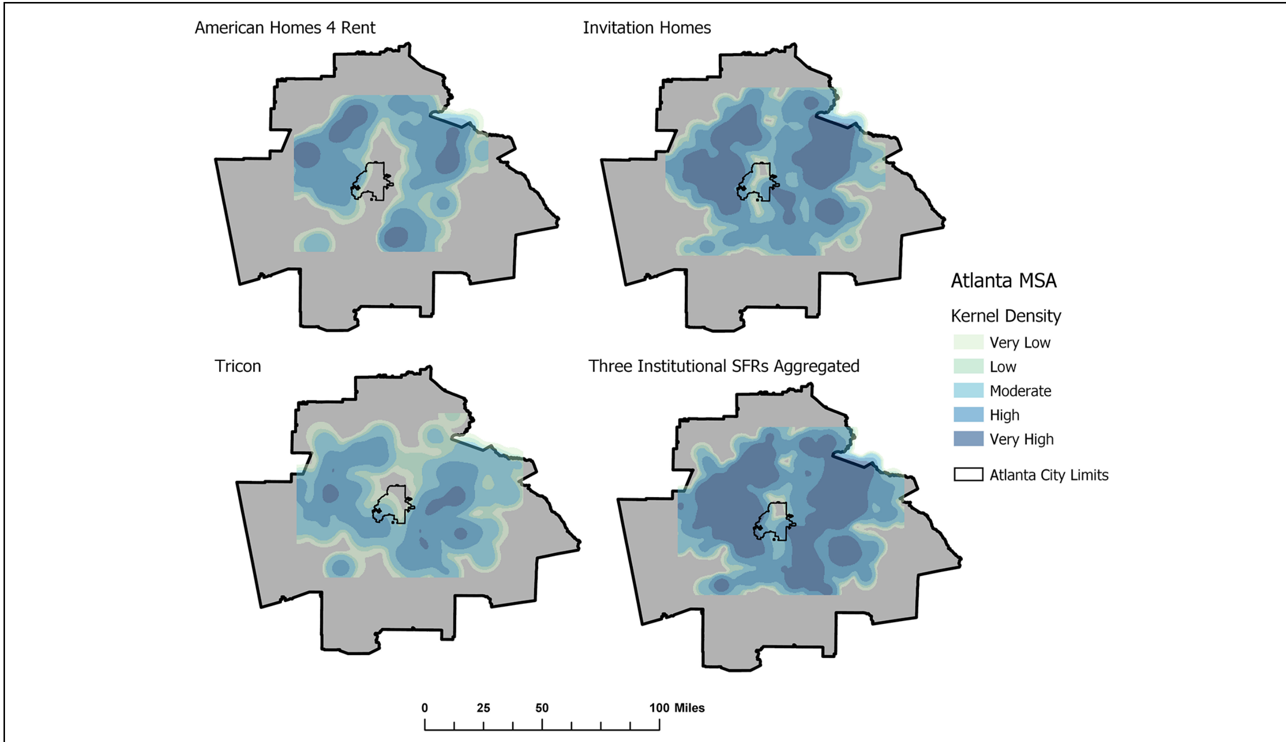

Figure 4. Kernal density of SFR vacancies by company, March 2019.
Note. SFR = single-family rental; MSA = Metropolitan Statistical Area.

Table 10. Institutional SFR Units by Neighborhood AMI.

	Atlanta MSA (%)	Phoenix MSA (%)	Tampa MSA (%)
Below 50% AMI	0.5	1.4	0.0
50%–80% AMI	11.1	15.5	5.3
80%–120% AMI	56.8	51.1	30.4
120%–150% AMI	22.1	25.8	19.9
Above 150% AMI	9.5	6.3	44.3
Total	100.0	100.0	100.0

Note. SFR = single-family rental; AMI = area median income; MSA = Metropolitan Statistical Area.

cluster in neighborhoods with higher household income and higher rents, and where there is a higher proportion of White households. Figure 3 and Table 10 confirm the finding that institutional SFRs are located in neighborhoods with mid-to-higher household incomes. The majority of institutional SFR listings are in moderate and higher income neighborhoods and very few are located in extremely low- or very low-income neighborhoods (less than 12% in Atlanta, less than 17% in Phoenix, and just over 5% in Tampa). Third, the market density strategy of INVH is evident given the large number of blue dots in these figures. INVH has a far greater market presence than either American Homes 4 Rent or Tricon.

As noted above, there is significant similarity in the market and neighborhood characteristics that each firm desires. As a result, the location of homes owned by these firms is notably similar. Figure 4 shows the kernel densities of homes in the Atlanta MSA. Across INVH, AMH, and Tricon, the densities show a remarkably similar pattern around the city proper. The plots in Figure 3 and the kernel densities presented in Figure 4 highlight a donut pattern around the central city of Atlanta where institutional SFR companies are active. As indicated by the aggregation of the three institutional SFRs, the greatest activity is located in neighborhoods northwest, northeast, and southeast of the city.

To answer the second question about economies of scale, we rely on financial analysis to test whether operating leverage is evident in SFR business models. Economies of scale are common in many businesses (Stigler 1958), so the presence of such operating leverage would not be unique. The question we can analyze is whether the SFR companies that emphasize density have different economies of scale than the companies that do not have this emphasis. First, we attempt to examine the pricing strategies of SFR companies. To assess this relationship, we compare the same-store[4] rental growth rates for Invitation Homes and American Homes 4 Rent to rental

Table 11. Rental Growth Rates.

	2015 (%)	2016 (%)	2017 (%)	2018 (%)
INVH				
Same-store rental growth—lease renewal	5.1	5.5	5.2	4.8
Same-store rental growth—new lease	4.3	5.5	3.5	3.3
AMH				
Same-home rental growth rates	2.5	3.1	3.1	3.6
American Community Survey				
Median gross rent—National	2.7	2.3	3.2	4.5
Median gross rent—Atlanta	3.4	5.2	4.4	4.8
Median gross rent—Tampa	2.0	5.5	3.9	5.4
Median gross rent—Phoenix	1.8	5.5	4.9	2.4

Note. INVH = Invitation Homes; AMH = American Homes 4 Rent.

growth rates from the American Community Survey. The analysis, highlighted in Table 11, shows that the markets in which these firms have large numbers of homes have higher rental growth rates than the nation as a whole. In general, both Invitation Homes and American Homes 4 Rent enjoy strong rental growth rates that are in line with the growth rates in Atlanta, Tampa, and Phoenix. In this small sample, the growth rates of Invitation Homes exceed those of American Homes 4 Rent, which may be evidence of stronger pricing power, though there are insufficient data to make an assessment of a causal link in this relationship.

A second potential source of advantage are economies of scale that come as a business scale. Both Invitation Homes and American Homes 4 Rent highlight the benefits of in-house property management on their operating efficiency. Presumably, those economies of scale increase as local density increases; therefore, it is reasonable to assume that Invitation Homes might exhibit stronger evidence of economies of scale than American Homes 4 Rent. A common method of assessing economies of scale is to examine how operating and management expenses scale as a business grows. Figure 5 shows property operating and management expenses as a percent of total rental revenue. As the chart shows, operating costs as a percentage of rental revenue has fallen as Invitation Homes has grown, while a similar analysis of American Homes 4 Rent shows no evidence of economies of scale. This is particularly notable for INVH during the period from 2014 to 2016. The substantial reduction in costs as a percent of revenue is driven by the fact that revenue grew by 39% during these two years, while total operating costs

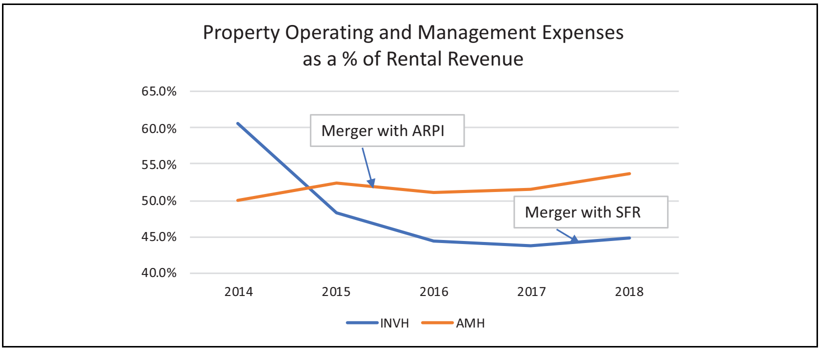

Figure 5. Analysis of economies of scale.
Note. ARPI = American Residential Properties; SFR = Starwood Waypoint; INVH = Invitation Homes; AMH = American Homes 4 Rent.

only grew by 6% over the same period. The figure shows that over the previous three years, INVH has a sustained five to nine percentage point advantage in its operating cost structure when compared to AMH. This analysis does not prove a causal relationship, but it does provide descriptive information about the operations and economies of scale of these companies.

Discussion and Implications

The home foreclosure crisis of the last decade prompted a significant shift in the ownership of single-family homes. A range of distressed buyers entered the market to buy single-family homes in bulk at a scale not previously seen in the United States. This article provides an overview of a new real estate asset class, documents its rapid rise, and highlights the strategies of the key industry participants. To conclude we review and amend Mallach's (2010, 2014) typology of SFR investors, present forward-looking observations about the industry, highlight policy implications regarding the rise of the institutional SFR industry, and emphasize important directions for future research on this investment phenomenon.

Mallach's (2010) typology of distressed home investors was created before the advent of the institutional SFR industry. In 2014, Mallach updated his typology to reflect variation in the "holder" category: those firms that hold homes for the short term (three to five years) and firms that hold for the medium to long term (five to 10 years). With the benefit of almost 10 years of data, we now know that many of these investors, as publicly traded companies, are holding these portfolios in perpetuity. While there is churn in the portfolio, and opportunistic sales, this business model is driven by cash

flows and long-term ownership of SFRs. Mallach's typology could be expanded to include a category of institutional investor "holders" who purchase homes at prices that make it possible to own and operate SFRs in perpetuity given the strong rents and cash flow generation. This third category of *holders* could be titled, "buy and hold institutional investors."

It will be interesting to see how this industry develops in the future. First, current housing market conditions differ meaningfully from conditions when institutional SFR firms began acquiring homes. The normalization of housing markets has created a growth challenge for these firms—higher home prices and the inability to purchase homes in bulk have limited their growth. The build-to-rent strategy of American Homes 4 Rent and Tricon American Homes is one response to changing market conditions. A question remains about how the rest of these firms, and their investors, will respond to slowing or stagnant portfolio growth. Following strong operating performance and stock growth in the first half of 2019, entities affiliated with Blackstone Group LP and Starwood Capital Group sold over two billion dollars of stock in earlier Invitation Homes in 2019 and in November 2019, Blackstone announced that it had sold its remaining $1.7 billion of Invitation Homes stock and no longer had any interest in the company (Dezember 2019a, 2019b). This suggests that these sophisticated investors are decreasing their commitment to this firm and asset class. Therefore, the ownership of this firm is now held by smaller institutional and retail investors. It is important to follow these changes in ownership, because they may have implications for this firm and the industry in the years to come. Observers and policymakers should stay focused on changes in this industry, either a re-acceleration of home purchases or increased home dispositions. Mallach (2014) highlights that a key policy question is how to deal with the potential sale of hundreds of thousands of homes if these firms decide to exit the business of owning and operating SFRs, an outcome that may be less likely for the publicly traded firms for the reasons previously discussed. Either outcome will have important implications for housing markets, home buyers, and tenants in the markets in which these firms operate.

Second, the development of this industry offers important policy lessons when analyzing the effect and consequences of the housing collapse and foreclosure crisis. Now that we are more than a decade removed from the housing and financial crisis, there is an opportunity to review the crisis and the public and private responses to it. Analyzing societal changes is relatively easy with the benefit of hindsight, but there is adequate information to suggest that the home foreclosure crisis was a large, missed opportunity for governments and advocates who seek to provide greater quantities of affordable housing in the United States. The aftermath of the crisis created a

situation in which the ownership of hundreds of thousands of moderately priced single-family homes transferred from individual to corporate ownership at distressed prices. The government did pursue policy responses in the wake of the crisis, including the National Stabilization Program (NSP), but these programs, while important, were insufficient when compared to the scale of the crisis (Spader et al. 2015). Congress authorized $6.9 billion for the NSP which paled in comparison to the massive investments made by small and large investors in the aftermath of the foreclosure crisis. A more aggressive state response could have entered that void and purchased homes with a view toward preserving affordability in perpetuity, but the government would have still had to compete with private investors to acquire homes. Alternatively, NSP could have been structured in a way to give local NSP grantees the power to effectively compete in the private housing market. Rather, evaluations of the program demonstrate that local grantees struggled to purchase homes given competition from a range of investors, and as a result had to target their resources on more distressed properties where the competition from these diverse investors was less intense (Spader et al. 2015).

The increasing participation of institutional investors raises broader concerns about competition for moderately priced single-family housing that is becoming increasingly scarce. As the homeownership rate increases and mortgage markets normalize, a growing number of households want to purchase single-family homes. But individual households seeking to purchase relatively low-priced single-family homes now face potential competition from well-capitalized firms that want to acquire the same properties.

Finally, the results of this study offer several potential avenues for future research. First, it remains an open question whether the overt focus on spatial density employed by Invitation Homes yields different housing and market outcomes. A question that is important for policymakers and advocates is whether concentrated ownership of SFRs provides an owner with additional rental pricing power that would not be available to single owners or institutional owners with more distributed holdings. Second, do institutional SFR firms crowd out potential homeowners in markets with high levels of institutional SFR ownership? Such power could restrict access to first time and lower income homebuyers. Third, is the institutional SFR model a sustainable business? Prior to the crisis, this business model did not exist due to operational concerns about managing portfolios of SFRs that are widely dispersed. The substantial reduction in home prices during the crisis created an opportunity for institutional players in the SFR market. As housing markets normalize, can the SFR model persist? Further home acquisitions by these firms could have significant consequences for housing markets, while

the dissolution of these firms could cause a flood of single-family homes to hit the market at an inopportune time. Given the substantial role that institutional SFR firms have in many U.S. cities, focusing on these firms and their impacts is an important task for researchers in the years to come. Finally, as this article was being revised prior to publication, the COVID-19 crisis emerged and the implications and consequences of this pandemic on the housing market remain unknown. But it is important to highlight the fact that the prior economic crisis of 2007–2009 created this investment opportunity and the virus-driven financial dislocation of 2020 could create another such opportunity for investors with capital.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

ORCID iD

Gregg Colburn https://orcid.org/0000-0001-7781-5177

Notes

1. Rental yields and capital gains contribute about equally to total returns at the national level, but there is variation in where investors are deriving returns at the city level (Eisfeldt and Demers 2018). Investors in lower price cities typically gain greater returns from rental yields (about 6.12% in the lowest quantile price cities from 1986 to 2014 compared to 2.92% in the highest quintile price cities; Eisfeldt and Demers 2018). Investors in higher price cities typically accrue greater returns from capital gains (5.34% in highest quintile price cities compared to 3.24% in the lowest quintile price cities; Eisfeldt and Demers 2018). Lower price ZIP Codes within cities typically have the highest total returns based on both higher rental yields and capital gains (Eisfeldt and Demers 2018).
2. Single-family rental stock based on 2017 estimates from the American Housing Survey. Because institutionally owned SFRs are only reported at the metropolitan level, we cannot generate credible ownership estimates for smaller geographic areas.
3. Becoming a Real Estate Investment Trust (REIT) is common among real estate companies and the motivation do so is driven by the tax benefits of that structure as well as the favorable reception that REITs have received from stock market investors.
4. The concept of same-store revenue growth is borrowed from the retail industry. In order to get a clear sense of growth rates, same-store methods measure rent

changes for the portfolio of homes that were owned in both periods of the measurement. Using this method avoids the problems associated with changes to a portfolio from one period to the next.

References

"Altisource Residential Corporation Form 10-K for Fiscal Year Ended December 31, 2012." 2013. Electronic Data Gathering, Analysis, and Retrieval. Accessed April 24, 2020. https://www.sec.gov/Archives/edgar/data/1555039/000155503913000005/resi-20121231x10k.htm.

"American Homes 4 Rent Form 10-K for Fiscal Year Ended December 31, 2013." 2014. Electronic Data Gathering, Analysis, and Retrieval. Accessed April 24, 2020. https://www.sec.gov/Archives/edgar/data/1562401/000119312514116022/d644538d10k.htm.

"American Homes 4 Rent Form 10-K for Fiscal Year Ended December 31, 2017." 2018. Electronic Data Gathering, Analysis, and Retrieval. Accessed April 24, 2020. https://www.sec.gov/Archives/edgar/data/1562401/000156240118000029/amh12311710k.htm.

"American Homes 4 Rent Form 10-K for Fiscal Year Ended December 31, 2018." 2019. Electronic Data Gathering, Analysis, and Retrieval. Accessed April 24, 2020. https://www.sec.gov/Archives/edgar/data/1562401/000156240119000020/amh12311810k.htm.

"American Residential Properties, Inc. Form 10-K for Fiscal Year Ended December 31, 2013." 2014. Electronic Data Gathering, Analysis, and Retrieval. Accessed April 24, 2020. https://www.sec.gov/Archives/edgar/data/1548981/000154898114000012/arpi1231201310k.htm.

Amherst Capital Management. 2016. *U.S. Single-Family Rental: An Emerging Institutional Asset Class*. New York: Amherst Capital Management.

Amherst Capital Management. 2018. *Amherst Capital Market Commentary, April 2018*. New York: Amherst Capital Management.

"Colony Starwood Homes Form 10-K for Fiscal Year Ended December 31, 2016." 2017. Electronic Data Gathering, Analysis, and Retrieval. Accessed April 24, 2020. https://www.sec.gov/Archives/edgar/data/1579471/000156459017002843/sfr-10k_20161231.htm.

Dezember, Ryan. 2019a. "Blackstone Moves out of Rental-Home Wager with a Big Gain." *The Wall Street Journal*, November. Accessed April 24, 2020. https://www.wsj.com/articles/blackstone-moves-out-of-rental-home-wager-with-a-big-gain-11574345608.

Dezember, Ryan. 2019b. "Blackstone Starts Selling Out of Home-Rental Empire." *The Wall Street Journal*, May 29. Accessed May 7, 2020. https://www.wsj.com/articles/blackstone-starts-selling-out-of-home-rental-empire-11559152

Dezember, Ryan. 2019c. "Wall Street's Big Landlords Are So Hungry for Houses They're Building Them." *The Wall Street Journal*, January 3. Accessed April 24, 2020. https://www.wsj.com/articles/wall-streets-big-landlords-are-so-hungry-for-houses-theyre-building-them-11546511401.

Eisfeldt, Andrea, and Andrew Demers. 2018. "Total Returns to Single Family Rentals." Working Paper 21804. Accessed April 24, 2020. https://www.nber.org/papers/w21804.

Esler, Bill. 2008. "Market Dislocations Can Open Game-Changing Opportunities." *Graphic Arts Monthly* 80 (11): 4.

Fields, Desiree. 2014. "The Rise of the Corporate Landlord: The Institutionalization of the Single-Family Rental Market and Potential Impact on Renters." Accessed April 24, 2020. https://homesforall.org/wp-content/uploads/2014/07/corp-landlord-report-web.pdf.

Fields, Desiree. 2018. "Constructing a New Asset Class: Property-Led Financial Accumulation after the Crisis." *Economic Geography* 94 (2): 118–40.

Fields, Desiree, Rajkumar Kohli, and Alex Schafran. 2016. "The Emerging Economic Geography of Single-Family Rental Securitization." Working Paper 2016-02. Federal Reserve Bank of San Francisco, San Francisco.

Immergluck, Dan. 2018. "The Rise of Single-Family Rentership in the Sunbelt Metropolis." *Housing Policy Debate* 28 (5): 814–29.

"Invitation Homes Inc. Form 10-K for Fiscal Year Ended December 31, 2017." 2018. Electronic Data Gathering, Analysis, and Retrieval. Accessed April 24, 2020. https://www.sec.gov/Archives/edgar/data/1687229/000168722918000018/a12312017ihallfs10k.htm.

"Invitation Homes Inc. Form 10-K for Fiscal Year Ended December 31, 2018." 2019. Electronic Data Gathering, Analysis, and Retrieval. Accessed April 24, 2020. https://www.sec.gov/Archives/edgar/data/1687229/000168722919000014/a123118ihinc10kdocument.htm.

"Invitation Homes to be largest US landlord in Starwood-Blackstone Deal." 2017. *CNBC*, August 11. Accessed June 28, 2018. https://www.cnbc.com/video/2017/08/11/invitation-homes-to-be-largest-us-landlord-on-starwood-blackstone-deal.html?&qsearchterm=invitation%20homes%20to%20be%20largest

Kiesche, Liz. 2019. *Invitation Homes Pulls Out of Nashville Market*. New York: Seeking Alpha.

Lambie-Hanson, Lauren, Wenli Li, and Michael Slonkosky. 2019. "Leaving Households Behind: Institutional Investors and the U.S. Housing Recovery." WP-01. Accessed April 24, 2020. https://philadelphiafed.org/-/media/research-and-data/publications/working-papers/2019/wp19-01.pdf.

Mallach, Alan. 2010. *Meeting the Challenge of Distressed Property Investors in America's Neighborhoods*. New York: Local Initiative Support Coalition.

Mallach, Alan. 2014. "Lessons from Las Vegas: Housing Markets, Neighborhoods, and Distressed Single-Family Property Investors." *Housing Policy Debate* 24 (4): 769–801. doi:10.1080/10511482.2013.872160.

Mari, Francesca. 2020. "A $60 Billion Housing Grab by Wall Street." *The New York Times Magazine*, May 4. Accessed April 24, 2020. https://www.nytimes.com/2020/03/04/magazine/wall-street-landlords.html.

Mills, James, Raven Molloy, and Rebecca Zarutskie. 2019. "Large-Scale Buy-to-Rent Investors in the Single-Family Housing Market: The Emergence of a New Asset Class." *Real Estate Economics* 47 (2): 399–430.

Molina, Emily T. 2016. "Foreclosures, Investors, and Uneven Development During the Great Recession in the Los Angeles Metropolitan Area." *Journal of Urban Affairs* 38 (4): 564–80.

NEPC. 2014. "Energy Market Dislocations Creating Long-Term Opportunities." Accessed April 24, 2020. https://www.nepc.com/insights/energy-market-dislocation-creating-long-term-opportunities.

Pfeiffer, Deirdre, Silvia R. Gonzalez, Paul M. Ong, and Chhandara Pech. 2019. *Wall Street Single-Family Homes in Los Angeles County: An Analysis of Invitation Homes*. Los Angeles: Center for Neighborhood Knowledge, UCLA Luskin School of Public Affairs.

Raymond, Elora Lee, Richard Duckworth, Benjamin Miller, Michael Lucas, and Shiraj Pokharel. 2018. "From Foreclosure to Eviction: Housing Insecurity in Corporate-Owned Single Family Rentals." *Cityscape: A Journal of Policy Development and Research* 20 (3): 159–88.

Reid, Caroline K., Rocio Sanchez-Moyano, and Carol J. Galante. 2018. *The Rise of Single-Family Rentals After the Foreclosure Crisis: Understanding Tenants Perspectives*. Berkeley: Terner Center, Univ. of California Berkeley.

Schnure, Calvin. 2014. "Single Family Rentals: Demographic, Structural and Financial Forces Driving the New Business Model." Accessed April 24, 2020. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2418684.

Schnure, Calvin. 2018. "Single Family Rentals: Demographic, Structural and Financial Forces Driving the New Business Model." doi:10.2139/ssrn.2418684.

"Silver Bay Realty Trust Corp. Form 10-K for Fiscal Year Ended December 31, 2016." 2017. Electronic Data Gathering, Analysis, and Retrieval. Accessed April 24, 2020. https://www.sec.gov/Archives/edgar/data/1557255/000155725517000027/q4201610-k.htm.

Soltani, Bahram. 2014. "The Anatomy of Corporate Fraud: A Comparative Analysis of High Profile American and European Corporate Scandals." *Journal of Business Ethics* 120 (2): 251–74.

Spader, Jonathan, Alvaro Cortes, Kimberly Burnett, Larry Buron, Michael DiDomenico, Anna Jefferson, Stephen Whitlow, Jennifer Lewis Buell, Christian Redfearn, and Jenny Schuetz. 2015. *The Evaluation of the Neighborhood*

Stabilization Program. Washington, DC: U.S. Department of Housing and Urban Development.

"Starwood Waypoint Residential Trust Form 10-K for Fiscal Year Ended December 31, 2014." 2015. Electronic Data Gathering, Analysis, and Retrieval. Accessed April 24, 2020. https://www.sec.gov/Archives/edgar/data/1579471/000119312515080907/d884053d10k.htm.

Stigler, George J. 1958. "The Economies of Scale." *Journal of Law and Economics* 31:169–76.

Williams, Joseph T. 1993. "Agency and Ownership of Housing." *Journal of Real Estate Finance and Economics* 7:83–97.

Author Biographies

Gregg Colburn is an assistant professor in the Runstad Department of Real Estate at the University of Washington. His research interests include housing policy, housing markets, and homelessness.

Rebecca J. Walter is an assistant professor in the Runstad Department of Real Estate at the University of Washington. Her research interests include federal housing policy, residential and commercial real estate and the spatial distribution of crime, and residential mobility and access to housing.

Deirdre Pfeiffer is an associate professor in the School of Geographical Sciences and Urban Planning at Arizona State University. Her research interests include housing as a cause and effect of growing social inequality and the role of housing planning in meeting the needs of diverse social groups.